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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/829,434	04/22/2004	Matthew J. Fairlie	62-337	8764
20736	7590	06/22/2006	EXAMINER	
MANELLI DENISON & SELTER			SODERQUIST, ARLEN	
2000 M STREET NW SUITE 700			ART UNIT	
WASHINGTON, DC 20036-3307			PAPER NUMBER	

1743

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

6

Office Action Summary	Application No.	Applicant(s)	
	10/829,434	FAIRLIE ET AL.	
	Examiner	Art Unit	
	Arlen Soderquist	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-128 is/are pending in the application.
- 4a) Of the above claim(s) 104-128 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 25-103 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 25-128 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4-22-04, 12-20-04</u> . | 6) <input checked="" type="checkbox"/> Other: <u>See Continuation Sheet</u> . |

Continuation of Attachment(s) 6). Other: 3-7-05, 7-20-05, 12-19-05,3-14-06.

Art Unit: 1743

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 25-103, drawn to an energy distribution network, classified in class 700, subclass 273.
 - II. Claims 104-128, drawn to a process for controlling a hydrogen energy system, classified in class 429, subclass 22.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another and materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the device as claimed can be used to perform a method in which the amount of energy used is recorded for later billing purposes with no control of the hydrogen generator or storage reservoir.
3. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.
5. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.
6. During a telephone conversation with Edward J. Stemberger on June 16, 2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 25-103. Affirmation of this election must be made by applicant in replying to this Office action. Claims 104-128 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

Art Unit: 1743

application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

8. The disclosure is objected to because of the following informalities: the continuing data should reflect that the instantly examined claims are a continuation of the claims examined in the parent application rather than a division as currently stated.

Appropriate correction is required.

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 25-26, 30-31, 33-35, 38-39, 47-54, 56-60, 63, 66-68, 72-74, 78, 83-88 and 93-103 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Pritchard (US 5,592,028). In the patent Pritchard teaches a wind farm generation scheme utilizing electrolysis to create gaseous fuel for a constant output generator. In the device at least some of the power output is utilized to convert water into hydrogen, store and burn the hydrogen to produce energy, and use the energy from the burning for the generation of electricity. The means includes a plurality of electrolysis modules consisting of electrolytic cells connected in series, with at least two modules connected in

parallel by a switch means. Figure 1 shows a wind farm (1, source of electric energy) which provides electrical power via a switch/transformer (2) to either the public utility grid (3) or an AC-DC converter/filter (4). Any resultant DC output of the wind farm after being suitably filtered by the AC-DC converter/filter, is fed to an electrolysis plant (5) where water is split into hydrogen and oxygen. The hydrogen produced then through a pipe to a compressor (6) then into a purification plant (7) and then into hydrogen storage means (8). After passing into the hydrogen storage means, the hydrogen may pass from the storage means to a hydrogen combustion/electrical generation plant (20). Alternatively, the hydrogen may pass from the storage means through a purification/liquefaction plant (9) into long term storage means (10). The storage means should have sufficient capacity to accommodate short term variations in available wind energy (of the order of a few weeks). The long term storage means 10 should have sufficient capacity to accommodate seasonal variations. Outlet means (11) provide for delivery of liquid hydrogen. Outlet means at 12 provide for delivery of gaseous hydrogen. The electrical generation plant may incorporate means for burning hydrogen in air or stoichiometrically with oxygen. Various means of combustion may be employed. Non-limitative examples include a conventional steam boiler/steam turbine plant (21), direct generation of steam from the stoichiometric combustion of hydrogen with oxygen (22), an internal combustion engine (23), hydrogen gas turbine combustion (24) or a hydrogen fuel cell (25). All the means (21-25) would effect the turning of conventional electrical generating plant which would output electrical power to the grid. Figure 2 shows the electrolysis plant in more detail. The plant includes a number of voltage dependent switches (32) each connected to an electrolysis module (38) (a stack of electrolysis cells 35a, 35b . . . 35z connected in series). DC (+) current from the wind farm, smoothed by the filter is passed to a voltage dependent switch. The switch has a number of operating positions (34) and the switch includes control means arranged to cause it to adopt a particular position dependent on the voltage across it. The switch can be electro-mechanical or electronic such as a thyristor. In this case each cell of the module would be connected via a thyristor to the voltage supplied with only one thyristor open at a time to determine the number of cells operating, viz if the thyristor connected to the sixth cell is open the voltage is supplied to the first six cells. The electrolysis cells have an optimum operating voltage at which they operate with maximum efficiency. Depending on cell construction this

optimum operating voltage is normally between 1.5 and 2.0 volts at room temperature. The voltage switch is arranged to ensure that each cell receives the correct voltage across it to ensure maximum efficiency by energizing the correct number of cells. For example if the voltage measured between the input and ground is 16 volts and the electrolysis cells have an optimum operating voltage of 1.6 volts then the switch is arranged to automatically move to a position where the 16 volts is supplied across 10 electrolysis cells. Each of the 10 cells then has a voltage of 1.6 volts across it: if the measured voltage changed to 19 volts then the switch would move to energize a further two cells making a total of 12 energized cells, each of which would have a voltage of 1.58 volts (close to the optimum) across it. In the preferred embodiment, the transition between switch positions is done so as to avoid losses due to spike effects and the switch response time is matched to the temporal (real time) characteristics of the filter. Although not indicated in the figure, a means may be provided to monitor the current density through each module and thereby provide feedback to the switch control means. Column 4, lines 36-49 teach that the invention allows for much longer periodic smoothing of the wind energy availability curve. The result of this is to allow a more reliable design for wind farms based upon seasonal or annual mean wind speed figures. The invention will permit, in principle, wind energy to contribute up to a 100% of total grid power, limited only by the total energy available in the local wind regime. All electrolysis products are initially put into the various storage means, and the electrolysis plant is made capable of accepting any power input up to the maximum rated, power of the wind plant. This can greatly simplify the design of the wind energy conversion plant as complex electro/mechanical output control is unnecessary. The wind farm could be designed to produce DC, and therefore hydrogen, at all times and may never have a direct connection to the grid. Column 2, lines 37-38 teach that preferably the system includes control means to monitor (collect data) and control the system. This control means would have inherently been connected to the wind farm energy source to collect data as a part of its being able to monitor and control the system since reducing the power variation is the intended purpose. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control means to monitor the electricity from the wind farm to be able to control the electrical generation plant when the power needs are not being met by the wind farm.

Art Unit: 1743

12. Claims 27-29, 32, 36-37, 40-46, 55, 61-62, 64-65, 69-71, 75-77, 79-82 and 89-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pritchard as applied to claims 25-26, 30-31, 33-35, 38-39, 47-54, 56-60, 63, 66-68, 72-74, 78, 83-88 and 93-103 above, and further in view of Takriti (US 6,021,402). Pritchard does not teach a more involved control system.

In the patent Takriti teaches a computer implemented risk-management system schedules the generating units of an electric utility while taking into consideration power trading with other utilities and the stochastic load on the utility system. The system provides the user with a tool that generates multiple load forecasts and allows the user to vary the fuel price between the different scenarios and the different periods of the planning horizon. The tool allows the user to model accurately the uncertain trading transactions and the changing fuel prices to meet the electric demand of customers at a minimal cost while making the maximum profit possible from power trading. The tool also allows the user to apply any set of linear constraints to fuels. A mathematical model of the problem is solved to provide the status of each generator at each time period of the planning horizon under each given scenario, the load on each generator during each period in which it is operating, an optimal fuel mix for each generating unit, and the prices for purchasing and selling power in the periods of the planning horizon.

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a control/risk management system as taught by Takriti into the Pritchard device because of the ability or predict the need for various inputs in combination with their cost, thereby reducing the cost/risk of operating the system as taught by Takriti.

13. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting

ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

14. Claims 25-103 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-167 of U.S. Patent No. 6,745,105. Although the conflicting claims are not identical, they are not patentably distinct from each other because the instant claims are of a scope that the patented claims are within the instant claim scope and one cannot practice the patented invention without practicing the instant invention.

15. The information disclosure statement filed April 22, 2004 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of at least one patent listed that is not in the English language. That reference has been lined through and has not been considered. The other lined-through entries in the various IDS are duplicate citations of patents that were previously cited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arlen Soderquist whose telephone number is (571) 272-1265. The examiner can normally be reached on Monday-Thursday and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arlen Soderquist
Primary Examiner
Art Unit 1743

